**IN THE UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF TEXAS
WACO DIVISION**

FREE SPEECH COALITION, INC., MG PREMIUM LTD, MG FREESITES LTD, WEBGROUP CZECH REPUBLIC, A.S., NKL ASSOCIATES, S.R.O., SONESTA TECHNOLOGIES, S.R.O., SONESTA MEDIA, S.R.O., YELLOW PRODUCTION S.R.O., PAPER STREET MEDIA, LLC, NEPTUNE MEDIA, LLC, JANE DOE, MEDIAME SRL, MIDUS HOLDINGS, INC., Plaintiffs, vs. ANGELA COLMENERO, IN HER OFFICIAL CAPACITY AS INTERIM ATTORNEY GENERAL FOR THE STATE OF TEXAS, Defendant.	Case No.: 1:23-cv-917

**DECLARATION OF SCOTT COLE IN SUPPORT OF PLAINTIFFS' MOTION FOR
EXPEDITED PRELIMINARY INJUNCTION**

I, Scott Cole, declare as follows:

1.   I am an attorney at Quinn Emanuel Urquhart & Sullivan, LLP, counsel of record for Plaintiffs. I have personal knowledge of the facts in this declaration and, if called upon to do so, could and would testify competently as to the matters set forth herein.

2.   Attached hereto as **Exhibit 1** is a true and correct copy of the article *Louisiana Wants Your ID if You're Looking at Adult-Only Websites*, accessed on July 24, 2023 at https://www.malwarebytes.com/blog/news/2023/01/attempts-to-stop-under-aged-from-accessing-adult-only-content-on-the-internet, with relevant text highlighted for the Court's convenience.

3.   Attached hereto as **Exhibit 2** is a true and correct copy of the article *What is the Dark Web? – Advice For Parents*, accessed on July 24, 2023 at https://www.internetmatters.org/hub/guidance/what-is-the-dark-web-advice-for-parents//, with relevant text highlighted for the Court's convenience.

4.   Attached hereto as **Exhibit 3** is a true and correct copy of the article *Change your default search engine in Microsoft Edge*, accessed on July 24, 2023 at https://support.microsoft.com/en-us/microsoft-edge/change-your-default-search-engine-in-microsoft-edge-cccaf51c-a4df-a43e-8036-d4d2c527a791, with relevant text highlighted for the Court's convenience.

5.   Attached hereto as **Exhibit 4** is a true and correct copy of the article *Microsoft Adds New Bing to Windows Computers in Effort to Roll out AI*, accessed on July 24, 2023 at https://www.reuters.com/technology/microsoft-adds-new-bing-windows-computers-effort-roll-out-ai-2023-02-28/, with relevant text highlighted for the Court's convenience.

6.   Attached as **Exhibit 5** is a true and correct copy of the article: Neil Thurman and Fabian Obster, "The regulation of internet pornography: What a survey of under-18s tells us about the necessity for and potential efficacy of emerging legislative approaches," 13 POLICY & INTERNET 415 (2001), with relevant text highlighted for the Court's convenience.

7.   Attached hereto as **Exhibit 6** is a true and correct copy of the article *The Responsive Website Font Size Guidelines*, accessed on July 24, 2023 at https://www.learnui.design/blog/mobile-desktop-website-font-size-guidelines.html.

8.   Attached hereto as **Exhibit 7** is a true and correct copy of the article *The Author of 'The Pornography Wars' Thinks We Should Watch Less and Listen More*, accessed on July 24, 2023 at https://www.latimes.com/entertainment-arts/books/story/2023-04-25/the-author-of-the-pornography-wars-thinks-we-should-watch-less-and-listen-more/.

I declare under penalty of perjury under the laws of the United States of America that the foregoing is true and correct.

Executed on August 2, 2023 in Austin, Texas.

DATED: August 2, 2023   Respectfully Submitted,

                                         QUINN EMANUEL URQUHART & SULLIVAN, LLP

                                         By: */s/ Scott Cole*
                                         _____

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EXHIBIT 1

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Document title:	Louisiana wants your ID if you're looking at adult-only websites
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ABOUT THE AUTHOR

Pieter Arntz
Malware Intelligence
Researcher

Was a Microsoft MVP in consumer security for 12 years running. Can speak four languages. Smells of rich mahogany and leather-bound books.

NEWS

Louisiana wants your ID if you're looking at adult-only websites

Posted: January 9, 2023 by Pieter Arntz

The state of Louisiana introduced a law on January 1, 2023, that holds sites that specialize in pornographic content accountable if they do not check their visitors' ages.

A website is obliged to check whether a visitor is of the legal age required to access pornographic content if a substantial portion of its content falls into that category—meaning more than thirty-three and one-third percent of total material on a website. So, for obvious reasons, we will refer to the affected parties as porn sites in the rest of this article.

The law, known as Act 440, can result in adult sites getting sued if they do not implement age verification technology. It lists a lot of reasons why explicit content can be harmful for young visitors and while we understand those reasons, we envision a lot of issues.

Identifying information

Verifying somebody's age will almost certainly require that users provide personally identifiable information (PII) such as a credit card, ID or driver's license. So the first question is, what are the risks of trusting adult sites with this kind of PII? What happens if the stored information gets exfiltrated by a threat actor or a rogue insider? There's money, headlines, and potentially leverage, in understanding people's sexual preferences. And it's not just politicians, sports stars and celebrities at risk: I can already envision the phishing mails that claim "Your ID was found on the servers of a porn site. Pay now or we will tell all your friends and family."

The legislators must have had the same thought. The law says the commercial entity or third-party service that does the age verification should not retain any identifying information of the individual after access has been granted to the material. And those that retain identifying information will be liable for damages.

That's reassuring but, unfortunately, computer systems are very bad at forgetting things. Data breaches

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after access has been granted to the material. And those that retain identifying information will be liable for damages.

That's reassuring but, unfortunately, computer systems are very bad at forgetting things. Data breaches can happen to those with the best intentions and they can have all kinds of consequences. Users have no way to know if their data is beind stored or discarded, and the law won't do anything to stop card skimmers—malware that's injected into a site to collect information as its entered into forms.

Location, location

As in real estate, location matters a lot here. As long as Louisiana is the only state, or one of a few, with such a law, it is child's play (pun intended) to circumvent the age verification. The IP address allocated to your computer can be used to discover with reasonable accurancy where you are in the world, to the nearest town or city. So, understanding where somebody is, and whether they should be asked their age, will probably be based on their IP address.

Such IP geolocation is not a foolproof system. Some ranges of IP addresses may occur only partially in Louisiana while the rest are located in other states or even countries. Both alse positives and false negatives are likely.

There are also several methods to mask or change an IP address deliberately, such as using a VPN, which can make it appear that a visitor is in a different city, or even a different country, than the one they are actually in.

Another location-related problem are the sites outside of Louisiana. Some countries are known to turn a blind eye to anything that doesn't hurt its own population and brings in cash. They would do absolutely nothing about complaints hailing from Louisiana or any other state or country based on this or similar laws.

UK

The UK has had plans to implement a similar law since 2016 as part of the Digital Economy Act, which demands mandatory age verification to access online pornography but was subsequently not enforced by the government.

And last year an even more far-reaching update was added to its draft Online Safety Bill. It hasn't happened yet, and it has received plenty of criticism for the reasons we have pointed out: Bad for privacy, easy to circumvent, and hard to achieve.

Draft amendments have been made to smooth the path to getting the bill passed and the legislative process should take a couple of months, before we know how much gets implemented.

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ARTICLES

What is the dark web? – Advice for parents

Internet Matters Team | September 10th, 2021
Internet Matters supports parents and professionals with comprehensive resources and expert guidance to help them navigate the ever-changing world of child internet safety.

BBC news beat Journey to the dark web | BBC Newsbeat   Share

BBC is a British public broadcast service. ›

BBC Newsbeat video showcasing some of what you can find on the dark web.

Only 4% of online content is public and can be searched. This is considered to be the surface web. The other 90% of online content is found on the deep web while the remaining 6% is on the dark web. To help you understand what these are and the risks for children, we've pulled together a quick summary of what you need to know.

What's on the page

- What is the deep web?
- What is the dark web?
- What is TOR?

WHAT IS THE DARK WEB?

- What is the deep web?
- What is the dark web?
- What is TOR?
- Why do people use the dark web?
- Is it illegal to use the dark web?
- What are the risks of the dark web to children?
- How is the dark web policed?
- What should I do if my child is using the dark web?
- How do I protect my child from the dark web?

What is the deep web?

It is a part of the World Wide Web which is hidden from public view. The contents cannot be accessed by usual search engines. It mainly consists of databases such as web mail and online banking that are hidden behind security protocols. These pages can be accessed directly but require a password to enter. The deep web is different from the dark web.

What is the dark web?

The dark web is a part of the World Wide Web that is only accessible through special software. The most commonly used software is called TOR. It allows users to communicate anonymously on networks without giving out identifying information like personal locations.

What is TOR?

TOR, or The Onion Router, is a free and open-sourced software that was originally created by US military researchers to allow an exchange of information completely anonymously. They later released this into the public domain, creating white noise and hiding messages for security purposes. The software is used to conceal users' identities.

Why do people use the dark web?

To hide their identity

- People may not wish to have their data collected
- It's popular with civil liberties groups, journalists and those who support privacy online
- They don't want to be found (they could be a criminal or looking to engage in criminal activity)
- They want to access dubious content
- They want to use hidden services – although TOR itself isn't hidden, the sites and users under it are hidden under layers of darknet encryption

For criminal purposes

- Trading in the black market
- Buying illegal products (e.g. weapons/drugs)

under it are hidden under layers of darknet encryption

For criminal purposes

- Trading in the black market
- Buying illegal products (e.g. weapons/drugs)
- Engaging in forums and media exchanges for paedophiles and terrorists

Is it illegal to use the dark web?

Unless you carry out unlawful acts, it is not illegal to use the dark web or TOR.

What are the risks of the dark web for children?

Lack of regulated content and users

- Due to the anonymity of the dark web, it is harder for law enforcement to investigate cases of abuse

Explicit content

- Children can access sites with indecent images, sites selling drugs and/or weapons. However, this is also the case for the surface web.

Online grooming

- Sex offenders are more likely to approach children on the surface web than the dark web
- However, sex offenders tend to use the dark web to meet online and discuss their strategy to take advantage of children

How is the dark web policed?

CEOP ⬀ – the Child Exploitation and Online Protection Command — which is part of the National Crime Agency, uses the skills of its various experts, including forensic professionals and covert internet investigators, to track illegal activity on the dark web.

CEOP gets over 1,300 reports a month, most of which come from industry groups such as the main internet service providers.

An annual review (2011-2012) showed that over 400 children had been safeguarded as a result of their activity. This also led to 192 suspects being arrested.

What should I do if my child is using the dark web?

Remain calm and gather context

- They haven't necessarily done anything illegal
- Understand their reasons for accessing the platform

Have an open and honest conversation just as you would for the surface web

- There are risks involved with both and, therefore, it is important to help them think critically about the matter

Recognise the warning signs

- People with bad intentions are good at winning trust and can build on this relationship to

- There are risks involved with both and, therefore, it is important to help them think critically about the matter

Recognise the warning signs

- People with bad intentions are good at winning trust and can build on this relationship to pressure your child. Help them recognise who to talk to and what information is safe to share

How do I protect my child from the dark web?

- Review privacy filters across all devices and apps. See our how-to guides to learn how to set these up
- A Virtual Private Network (VPN) ⊡ can be used to provide an additional layer of security to your child's online activity
- Build their critical thinking: help your child learn how to spot things that may not be what they seem and make smarter choices online. Inform them about the reasons someone using the dark web might want to remain anonymous and how that can cause them harm.
- If your child comes across something that is upsetting or worrying, please report this to the **CEOP** ⊡

More to Explore

Learn more about the Dark Web and how you can protect your child from the following sources.

| ⊘ Advice for 11-13 years | ⊘ Advice for 14+ year olds | ⊘ Inappropriate content resources | ⊘ Online grooming resources |

| ⊘ Online pornography resources | ⊘ Piracy | ⊘ Privacy & Identity theft resources | ⊘ Privacy setting | ⊘ Radicalisation resources |

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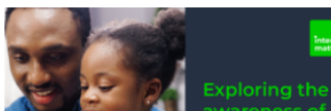
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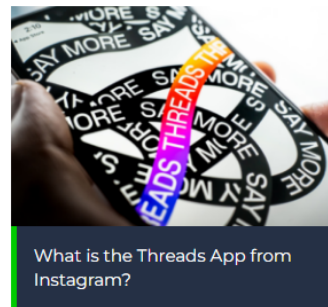
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Change your default search engine in Microsoft Edge

Windows 11, Windows 10, Windows 8.1

Keeping Bing as your default search engine provides an enhanced search experience in the new Microsoft Edge , including direct links to Windows apps, relevant suggestions from your organization if you're signed in with a work or school account, and instant answers to questions about Windows. However, you can change the default search engine to any site that uses OpenSearch technology.

To change your default search engine in Microsoft Edge:

1. Perform a search in the address bar using the search engine you want to set as your default.

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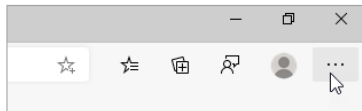
3. Select **Privacy, search, and services**.
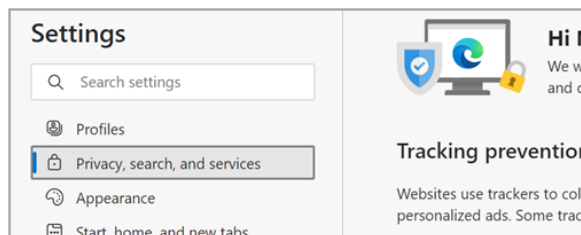
4. Scroll all the way down to the **Services** section and select **Address bar and search**.
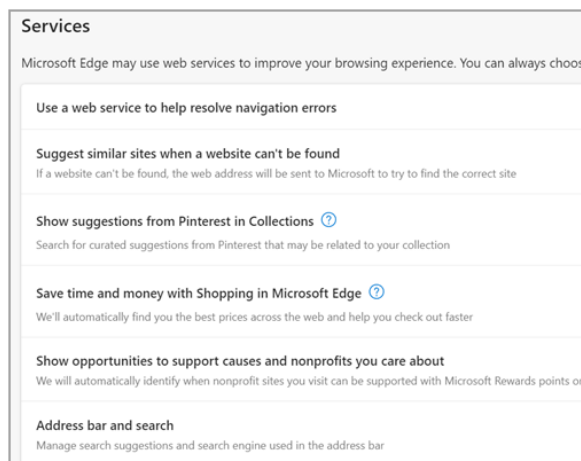
5. Choose your preferred search engine from the **Search engine used in the address bar** menu.

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Manage search suggestions and search engine used in the address bar

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Surface Studio 2+	Microsoft Store support	Microsoft Teams for Education	Dynamics 365	Documentation	Company news
Surface Laptop Go 2	Returns	Microsoft 365 Education	Microsoft 365	Microsoft Learn	Privacy at Microsoft
Surface Laptop Studio	Order tracking	How to buy for your school	Microsoft Power Platform	Microsoft Tech Community	Investors
Surface Go 3	Trade-in for Cash	Educator training and development	Microsoft Teams	Azure Marketplace	Diversity and inclusion
Microsoft 365	Microsoft Store Promise	Deals for students and parents	Microsoft Industry	AppSource	Accessibility
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5. Choose your preferred search engine from the **Search engine used in the address bar** menu.

To add a different search engine, perform a search in the address bar using that search engine (or a website that supports search, like a wiki site). Then go to **Settings and more** ⋯ > **Settings** ⚙ > **Privacy, search, and services** > **Address bar and search**. The engine or website you used to search will now appear in the list of options you can select.

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Disrupted

Microsoft adds new Bing to Windows computers in effort to roll out AI

By Jeffrey Dastin

February 28, 2023 2:07 PM UTC · Updated 5 months ago

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A view shows a Microsoft logo at Microsoft offices in Issy-les-Moulineaux near Paris, France, January 25, 2023. REUTERS/Gonzalo Fuentes/File Photo

Feb 28 (Reuters) - Microsoft Corp (MSFT.O) on Tuesday started adding its recently upgraded Bing search engine to its Windows computer software, aiming to put artificial intelligence (AI) at the fingertips of hundreds of millions of people.

The Windows 11 update, Microsoft's latest in a flurry of product revamps this month, shows how the Redmond, Washington-based software maker is marching ahead on AI notwithstanding recent scrutiny of its technology.

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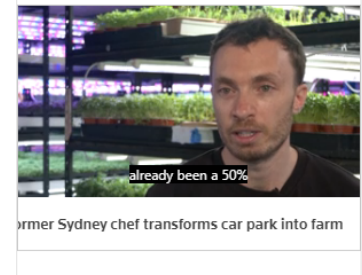
Microsoft's operating system will include the new Bing in desktop computers' search box, which helps half a billion monthly users navigate their files and the internet, the company said. The search engine itself is still in a preview mode, accessible to more than 1 million people in 169 countries with a wait list for others, Microsoft said.

The company unveiled its AI-powered chatbot for Bing as it aims to wrest market share from Alphabet Inc's (GOOGL.O) Google, moving faster with ChatGPT-like software for search.

Feedback

Microsoft has been gathering feedback on the new Bing before a wider rollout. The engine's AI chatbot reportedly professed love or made threats to some testers, leading the company to cap long chats it said "provoked" responses it did not intend.

In addition to the new Bing, Microsoft's Windows update will include software that can connect to iPhone messages and calls starting with a limited set of users, the company said.

Reporting by Jeffrey Dastin in Palo Alto, Calif. Editing by Matthew Lewis

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Jeffrey Dastin is a correspondent for Reuters based in San Francisco, where he reports on the technology industry and artificial intelligence. He joined Reuters in 2014, originally writing about

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Jeffrey Dastin is a correspondent for Reuters based in San Francisco, where he reports on the technology industry and artificial intelligence. He joined Reuters in 2014, originally writing about airlines and travel from the New York bureau. Dastin graduated from Yale University with a degree in history. He was part of a team that examined lobbying by Amazon.com around the world, for which he won a SOPA Award in 2022.

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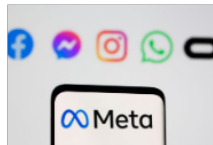
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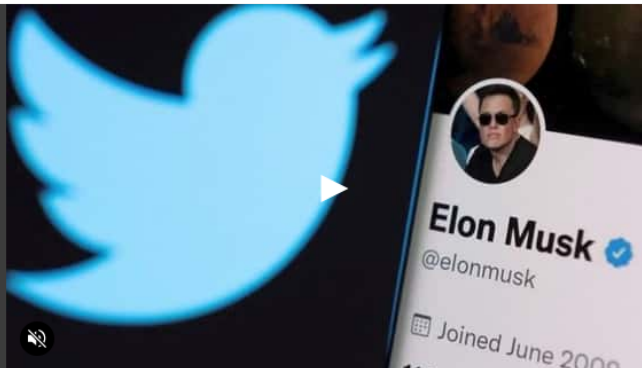
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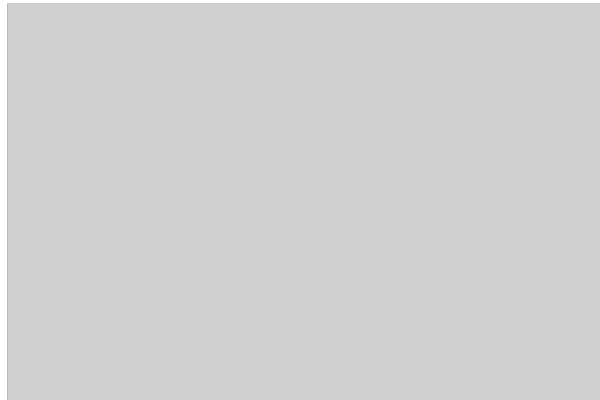
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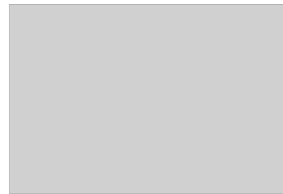
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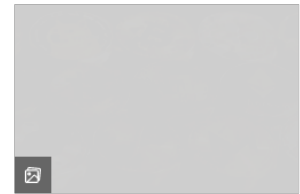
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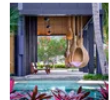
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EXHIBIT 5

RESEARCH ARTICLE

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The regulation of internet pornography: What a survey of under-18s tells us about the necessity for and potential efficacy of emerging legislative approaches

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Abstract

In 2017, the UK Parliament passed an Act requiring legal pornographic websites to implement 'robust' age verification checks. Although the Act inspired lawmakers elsewhere to propose similar legislation, it was never enacted, in part because it did not cover social media platforms. Instead, the UK government has turned to its Online Harms White Paper—which does target social media platforms—to protect children from online pornography. There is, however, scant evidence on the media platforms and technologies children use to access pornography. To fill this knowledge gap, we conducted a survey of 16- and 17-year-olds in the United Kingdom. The results show that more (63%) had seen pornography on social media platforms than on pornographic websites (47%), suggesting the UK government was right to target such platforms in its latest proposals. However, pornography was much more frequently viewed on pornographic websites than on social media, showing how important the regulation of such sites remains. Furthermore, our finding that 46% of 16- and 17-year-olds had used a virtual private network or Tor browser adds weight to concerns that restrictions on legal internet pornography—such as age verification checks—imposed by a single country may be circumvented by those the restrictions are designed to protect.

THURMAN AND OBSTER

INTRODUCTION

The moral panic over 'cyberporn' may not have begun with *Time* magazine's eponymous 1995 cover story, but Philip Elmer-Dewitt's infamous article certainly amplified the anxiety. Drawing on a controversial piece of research, his feature claimed that 'trading in sexually explicit imagery … is now one of the largest … recreational applications of … computer networks' (Elmer-Dewitt, 1995). Whatever that claim's contemporaneous veracity, some of the issues raised in the article remain relevant more than two decades later, including: How online pornography can 'fall into the hands of' children and adolescents; lawmakers' 'obligation to preserve essential civil liberties'; and the difficulties of censoring global, decentralised communications networks (ibid.).

Elmer-Dewitt's article was published at a time when governments were starting to take positions on these issues. In some countries with weak or poorly upheld civil liberties, decisions were being taken to proscribe online pornography altogether. In the same year as the *Time* cover story, for instance, the People's Republic of China announced such a ban (Associated Press, 1995). Two years later, when Vietnam allowed its residents to access the internet, it did so with filters that blocked pornography (AFP, 1997). Similar prohibitions are still in place in a number of countries—such as the United Arab Emirates, Uzbekistan and Pakistan (Freedom House, 2019a, 2019b, 2019c).

Most democratic countries have not tried to completely prohibit online pornography, but have tended to restrict only certain forms such as 'child' and 'extreme' pornography (Nair, 2019). Although some of their politicians have attempted to bring in wider bans on legal, adult pornography, those efforts have largely been frustrated by free speech rights (see, e.g., Carlin, 1996) and by the global nature of the internet, which makes it challenging to enforce national legislation on providers of pornography located outside a country's jurisdiction. Publishers of pornography tend to be based in territories that do not impede their operations.

The 1995 *Time* magazine cover story said 'some fairly daunting' computer skills were required to download and view pornographic images from the internet (Elmer-Dewitt, 1995). Such skills are clearly no longer necessary. In 2009, the president of the British Board of Film Classification (BBFC) talked about how a 'vast catalogue of explicit pornographic videos' was available instantly, and for free, via popular "YouTube-style" websites' (Wake, 2009). One such site, Pornhub, which was launched in 2007, is now, by one measure, the 27th most popular website in the world (Alexa, 2019).

The popularity of such so-called 'porn-tube' sites may be a reason why governments in some democracies have started to look again at their laws. In 2013, the Icelandic government proposed 'creating a national internet filter and a blacklist of websites that contain pornographic content'. That plan, however, never reached the statute book (Freedom House, 2017). Not so the United Kingdom's Digital Economy Bill, which passed into law in 2017. The Digital Economy Act, as it became, meant that the United Kingdom became one of the first democracies in the world to pass legislation that, if enacted, would limit access to legal online pornography by its residents. Part 3 of the Act required providers of online commercial pornography accessible from the United Kingdom to deploy robust age verification controls to ensure that those accessing explicit material were at least 18-years old.

The law targeted pornographic sites based outside the United Kingdom. Sites based in the United Kingdom were already subject to such regulations but had next to no market share (Chorley, 2014). The body that was initially appointed to enforce the legislation would have had the power to instruct internet service providers in the United Kingdom to block sites that did not comply (BBFC, 'Frequently Asked Questions', https://www.ageverificationregulator.com/faq#10), as well as take other measures.

The United Kingdom's age verification legislation prompted governments in Ireland, Australia, New Zealand, and Poland to consider similar measures (Finn, 2019; Radio New Zealand, 2018; Taylor, 2020; Yagielowicz, 2019). France passed a similar law in July 2020 (Braun & Kayali, 2020) and a private member's bill that aims to restrict 'young persons' online access to sexually explicit material' received its first reading in the Canadian Senate in September 2020 (Parliament of Canada, 2020). In Germany, authorities are attempting to force internet service providers to block legal pornographic websites that do not implement age verification controls (Geiger, 2020). However, Part 3 of the Digital Economy Act has not been enacted by the UK government and looks unlikely to be, in part because it did not cover social media platforms, a potential source of pornographic content. Instead, the UK government has tabled an alternative, wider set of proposals aimed at 'tech companies' that allow 'users to share or discover user-generated content or interact with each other online'. The proposals aim to reduce 'online harms'—such as children's exposure to adult pornography—through a 'range of tools' (Gov.uk, 2020), including, but not limited to, age verification technologies. There are important differences between sexually explicit content that is user-generated and commercial pornography, and the transition in regulatory attention from a focus on commercial porn to 'harmful' user-generated content will be addressed further later in this article.

In light of the policies being formulated by elected governments to regulate legal internet pornography, this study seeks to add to the evidence from which such policies can draw and provide a baseline for future longitudinal research on the effects of any legislation that is enacted in the United Kingdom. We do this by conducting and analysing a survey of 16- and 17-year-olds in the United Kingdom ($N = 1,001$). Specifically, we analyse the proportions of 16- and 17-year-olds who have been exposed to online (and offline) pornography, the frequency and duration of any such consumption, and any sociodemographic variations. As we have mentioned, the United Kingdom's original age verification legislation only targeted dedicated pornographic websites. Social media platforms, search engines, and video-sharing sites such as YouTube were exempt. The UK government's subsequent proposals do, however, target these other platforms. In light of this change, our analysis also looks at which platforms 16- and 17-year-olds in the United Kingdom use to access pornography. Questions have been raised about the effectiveness of age verification controls on online pornography because, some say, users could easily bypass such controls using technologies such as VPNs (virtual private networks) and Tor browsers (see, e.g., Matthews-King, 2018). Consequently, we also analyse the extent to which 16- and 17-year-olds in the United Kingdom are aware of and use these technologies.

Our results show that, overall, 80.5% of 16- and 17-year-olds in the United Kingdom said they had seen 'sexually explicit porn videos or pictures'. Among this large majority, their last exposure was, on average, 5.5 days previously. It was most common, however, for those 16- and 17-year-olds in the United Kingdom who had seen sexually explicit videos or pictures to have seen them on the day they completed the survey (see Table 1 and Figure 1). A higher proportion of 16- and 17-year-olds in the United Kingdom have been exposed to sexually explicit videos or pictures on social media (63%) and search engines (51%) than on dedicated pornographic websites (47%). However, pornographic material is much more frequently viewed on dedicated pornographic websites than on social media, search engines, or YouTube (see Table 1 and Figure 1).

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TABLE 1   Reach of, and recency of exposure to, sexually explicit porn videos or pictures via eight media platforms among 16- and 17-year-olds in the United Kingdom, June 2019

Media platform	% who've seen sexually explicit porn videos or pictures on media platform(s)	Days since last exposure to sexually explicit porn videos or pictures on media platform(s)	
		Mean	Median
Online porn websites that only show sexually explicit content	47	13	1
Social media (like Instagram, Twitter, or Reddit)	63	60	20
Internet search engines (like Google)	51	58	20
TV or DVDs	38	56	20
Images or videos that someone downloaded or sent to you (e.g., via WhatsApp or Snapchat)	39	119	30
YouTube	24	170	45
E-mail	6	44	20
Magazines	22	277	95
Any of the eight media platforms above	81	6	0
Any of the five online platforms[a]	78	6	0

[a]Online porn websites that only show sexually explicit content; social media (like Instagram, Twitter, or Reddit); internet search engines (like Google); images or videos that someone downloaded or sent to you (e.g. via WhatsApp or Snapchat); and YouTube.
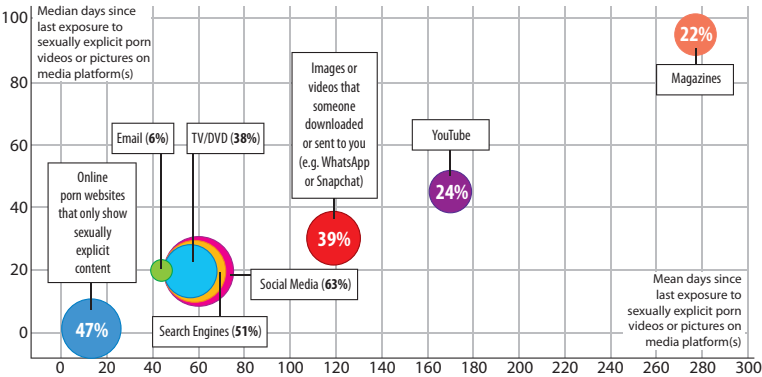

FIGURE 1   Reach of—and recency of exposure to—pornography via each of eight media platforms among 16- and 17-year-olds in the UK (*N* = 1,001). The size of the bubbles indicates the proportion who have had any exposure. The position of the bubbles indicates the mean and median days since last exposure

Regression analysis showed significant differences in the consumption of pornography by males and females and by respondents from households of different social grades.

Finally, our results also showed that 46% of 16- and 17-year-olds had used a VPN or Tor browser and another 23% knew what they were.

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The study has important implications for legislators considering the regulation of legal internet pornography. First, it shows that a large majority of 16- and 17-year-olds in the United Kingdom are exposed to online pornography and that the exposure is relatively frequent. Second, it shows the targets of the United Kingdom's original age verification legislation—dedicated pornographic websites—are the most frequent source of internet pornography for 16- and 17-year-olds in the United Kingdom, with those who use them doing so for an average of 2 h 18 min a month. However, other sources, such as social media platforms, are also important, suggesting that the UK government was right to include such platforms in its latest proposals to reduce children's exposure to legal online pornography. Third, the level of knowledge about, and use of, VPNs and Tor browsers by those under 18 in the United Kingdom adds weight to concerns that restrictions on the access to legal online pornography imposed by a single country may be circumvented by those the checks are designed to protect.

In the Literature Review, we will provide a brief history of the United Kingdom's age verification legislation and its likely successor and review some of the previous research on children and adolescents' exposure to online pornography, including such data as exists about the platforms through which they are exposed. A description of the methods used in our survey comes next, followed by the Results and Discussion.

LITERATURE REVIEW

The United Kingdom's age verification legislation and its likely successor

The Digital Economy Act of 2017 stated that legal online commercial pornography accessible from the United Kingdom must deploy age verification controls to prevent children from accessing explicit material. UK pornographic sites were already required to deploy age verification, but most pornographic sites visited by UK users are located outside the United Kingdom (Department for Digital, Culture, Media and Sport [DCMS], 2017, p. 4) and it is these sites that the Act targeted. The BBFC, the body that deals with age regulation for films and videos, was tasked with oversight. The stated intention was to apply the same age regulation that applies to legal offline pornography to legal online pornography (BBFC, 'Age-Verification under the Digital Economy Act 2017', https://www.ageverificationregulator.com/).

The Act was introduced by the Conservative government in line with a 2015 manifesto commitment (Gayle, 2018; Children's Media Foundation, 2020). The age verification measures were to be found in Part 3 of the Act, which also prohibited the availability of extreme pornographic content online (BBFC, 'Frequently Asked Questions', https://www.ageverificationregulator.com/faq/#1).

If implemented, the age verification regulation would have required people wishing to access legal commercial online pornography to prove they are over 18. According to the BBFC, the system would not have involved personal identification of the user (BBFC, 'Age-Verification under the Digital Economy Act 2017', https://www.ageverificationregulator.com/). There would have been several age verification options, 'normally' provided by third parties so that users would not have had to share personal information directly with pornographic websites. This might have involved buying a card in a shop or using ID documents online. The BBFC stated that its main focus would be on 'commercial pornographic sites with high volumes of traffic'. It would carry out 'spot checks on less-visited sites' and also provide a means for individuals to report noncompliers (BBFC, 'Frequently Asked Questions', https://www.ageverificationregulator.com/faq/#1).

Critics pointed out that the measures left some legal online pornography unpoliced. They did not cover 'websites on which less than a third of the content is pornographic material and where it is provided free of charge', which meant that 'blogging, social media and image-sharing services such as Imgur, Tumblr, Twitter and Reddit, which host vast quantities of pornographic content', would 'continue to be accessible without any age checks' (Gayle, 2018). Search engines too fell outside the regulations (BBFC, 'Frequently Asked Questions', https://www.ageverificationregulator.com/faq/#1).

The BBFC could have requested social media and search engines to withdraw their services from non-compliers (BBFC, 'Frequently Asked Questions', https://www. ageverificationregulator.com/faq/#1), but they would not have been obliged to do so. The same was true for payment service providers (DCMS, 2017). The BBFC would, however, have had the power to instruct internet service providers to block noncompliant porno-graphic services (DCMS, 2017).

Concerns were also voiced about users being pushed towards the dark web. The Open Rights Group talked of users being forced 'underground' and resorting to the use of masked means of browsing such as Tor, which anonymises usage and makes available extreme and illegal material (Wheeler, 2018).

Some critics described the regulations as 'largely unworkable', with the restrictions easily sidestepped by the use of 'a virtual private network or other software' that allows access to sites 'via an unrestricted country' (Matthews-King, 2018). It was claimed that though the scheme might help to prevent children stumbling on inappropriate sites, it would provide little impediment to 'determined teenagers' (Kelion, 2017). The government impact report ac-knowledged the possible use of VPNs and peer-to-peer sharing as a means of bypassing restrictions, however, the Age Verification Providers Association denied that restrictions could be 'easily circumvented', claiming that adult sites can block VPNs if they want, 'just as Netflix and the BBC iPlayer already do' (Children's Media Foundation, 2020).

The legislation was subject to delays. In March 2018, the government stated that it needed more time to 'get it right' (Kleinman, 2018), and in June 2019, it announced another delay, 'in the region of 6 months', because it had failed to inform the European Union of the proposals as required by European law (Waterson & Hern, 2019).

In October 2019, the UK government announced that it would 'not be commencing Part 3 of the Digital Economy Act 2017 concerning age verification for online pornography' (Morgan, 2019). It stated that this was not due to any lessening of its desire to protect children from accessing inappropriate, harmful content, which it still believed was 'vital' (ibid.). Rather, it appeared to have had concerns that the age verification regulations that formed part of the Digital Economy Act were not 'coherent' and 'comprehensive', in part because they did 'not cover social media platforms' (ibid.). Others suggested privacy con-cerns may have played a part in the decision, with the companies developing the age verification procedures subject only to 'voluntary' privacy commitments and user details vulnerable, it was said, to a data breach (BBC News, 2020).

As an alternative, the government proposed that its 'objective of protecting children from online pornography' (Gov.uk, 2020) could be achieved through proposals developed as part of its Online Harms White Paper (HM Government, 2019), which it had published in April 2019. This Paper was wider in scope than the abandoned regulations. It placed a 'duty of care on companies to improve online safety' (Morgan, 2019), with the 'harms' listed in the Paper including terrorist propaganda, cyberbullying and assisting suicide, in addition to 'underage exposure to legal content', which included 'children accessing pornography' (HM Government, 2019, p. 31). The government proposed that the regulatory framework should apply to 'companies that allow users to share or discover user-generated content or interact with each other online' and named 'social media platforms, file-hosting sites, public discussion forums, messaging services and search engines' as examples of such companies (p. 8).

In its response to the feedback it received on the Paper, the government said it would 'expect companies to use a proportionate range of tools, including age assurance and age verification technologies to prevent children from accessing age-inappropriate or harmful content' (Gov.uk, 2020). The Office of Communications (Ofcom), which regulates communications services including television and radio (Ofcom, 'What Is Ofcom?', https://www.ofcom.org.uk/about-ofcom/what-is-ofcom), is likely to be the regulator of any Online Harms Act (Gov.uk, 2020) and may have 'powers to issue substantial fines and to impose liability on individual members of senior management' (HM Government, 2019, p. 7) for noncompliance.

Research into adolescents' use of pornography, including online

Prevalence and predictors

Peter and Valkenburg's (2016) review of 20 years of research about adolescents and pornography provides a comprehensive summary of the literature that was published between 1995 and 2015. The authors reviewed 75 studies and one of their goals—to 'revisit the question of the prevalence and predictors of adolescents' use of pornography'—is relevant to this study. They found that 'findings about the prevalence of adolescents' use of pornography differ greatly'. The authors concluded that, although the studies 'suggest that at least a sizable minority of all adolescents use pornography', 'exact aggregate figures about adolescents' pornography use seem difficult to derive from the literature'.

They provide three reasons for this 'diversity of findings'. First, that the studies have varied methodologically, 'notably in terms of sampling method, sample size, sample composition, survey mode/administration, and operationalization of pornography use'. Second, that in the period under review the 'Internet has undergone dramatic changes—and with it adolescents' access to Internet pornography'. Third, 'the cultural context (e.g., sex education, sexual liberalism) of studies is likely to affect how often adolescents (report to) use pornography'. Kohut et al. (2020) agree that there is little by way of a global consensus regarding the proportion of people who use pornography and the intensity of that use. They too point to differences in sample composition between studies and how those studies conceptualised and measured pornography use.

Although Peter and Valkenburg (2016) make clear that generalisations are not possible about the prevalence of adolescents' use of pornography, they do make a tentative generalisation about the predictors of such use, specifically that 'the most likely users of pornography are male, pubertally more advanced, sensation-seeking adolescents with weak or troubled family relations'. This conclusion was supported by Alexandraki et al.'s (2018) systematic review of research on adolescent pornography use, which included research published up to 1 May 2017.

Research about young people and pornography published since 2017, and therefore, not part of Peter and Valkenburg's (2016) or Alexandraki et al.'s (2018) reviews, has continued to focus on a variety of cultural contexts, to utilise differently sized and composed samples, and to define pornography in a variety of ways. It is no surprise then that these studies differ in the proportions of young people they find to have been exposed to pornography. For example, Wright et al. (2020) found that 68% of the US sample of the 14- to 18-year-olds they surveyed had viewed pornography (defined as 'sexually explicit pictures, videos, or livestreams'), whereas, in Hong Kong, Ma et al. (2017) found that only 2%–6% of their 11- to 16-year-old sample had intentionally viewed pornography and 4%–14% had come across it unintentionally.

There has been a limited amount of research on the exposure to pornography by children and adolescents in the United Kingdom. Horvath et al. (2013) identified fewer than 10

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studies published between 1983 and 2013 that contained '"new" empirical evidence'. Indeed, Nash et al. (2015, p. 5) were, in 2015, unable 'to find any recent UK studies which provide clear figures for online and offline viewing of pornography for all children up to the age of 18'. Since 2015, there has, however, been one study that does provide some clear figures. An online survey commissioned by BBFC and conducted in 2019 with a representative sample ($N = 1,142$) of children and adolescents in the United Kingdom found that 51% of 11- to 13-year-olds, 66% of 14- and 15-year-olds, and 79% of 16- and 17–year-olds had seen pornography at some point (BBFC, 2020, p. 15). Other than for age, the study did not report on any potential predictors of pornography use found within the survey data, for example gender or socioeconomic classification.

Intensity of consumption

In addition to whether or not children and adolescents have been exposed to pornography, the intensity of any consumption—in terms of both frequency and time spent—is clearly of interest, given that there is some evidence that frequent use is associated with problem behaviours (Svedin et al., 2011), including internet pornography addiction (Harper & Hodgins, 2016).

In their review of 276 studies on pornography and children/adolescents published up to 2013, Horvath et al. (2013, p. 22) note discrepancies 'with regard to the regularity of exposure', with some research suggesting that exposure is infrequent and other studies reporting greater frequency. This contradictory evidence, the authors write, 'highlights the importance of considering frequency as well as prevalence to obtain a full picture'. According to the authors, 'few studies have considered the length of time spent viewing pornography' (p. 22).

In the context of the United Kingdom, the only quantitative data on the frequency with which pornography was consumed that was reported in the aforementioned BBFC survey related to whether exposure had been 'in the last 2 weeks' or earlier. Of those who had seen pornography, between 18% (of 11- to 13-year-olds) and 41% (of 16- and 17-year-olds) had seen it in the last 2 weeks (BBFC, 2020, p. 15). The BBFC study also conducted 36 qualitative interviews with 16- to 18-year-olds. 'Most' of the 20 boys interviewed 'reported having watched pornography daily for a period of their lives', while the amount of pornography watched by the 16 girls varied: 'Some … reported watching pornography four times a week between the ages of 14 and 16, whereas others said they watched it a few times a month' (BBFC, 2020, p. 20).

Although the BBFC study did not report the amount of time children and adolescents spent viewing pornography, there are some recent figures from New Zealand, courtesy of a nationally representative survey ($N = 2,071$) carried out by the Office of Film and Literature Classification (OFLC)—New Zealand's equivalent of the BBFC—with 14- to 17-year-olds. The results show that most (71%) of 14- to 17-year-olds in New Zealand who had seen pornography in the last 6 months spent either 'a few minutes' or 'up to half an hour' looking at porn each time they saw it (OFLC, 2018, p. 24).

Platforms

Beyond the prevalence and intensity of pornography use among adolescents, this study is also interested in how—that is, through which media platforms—that exposure takes place. Having such data will allow us to evaluate the UK government's decision to expand its plans for the regulation of legal internet pornography to include material available on platforms other than dedicated pornographic websites, such as social media networks.

The literature on children and adolescents' use of pornography rarely pays much attention to the platforms through which that use takes place. This is understandable given that the foci of many of the previous studies—on, for example, sexual behaviour (Doornwaard et al., 2015), academic performance (Beyens et al., 2015), and sexting (Van Ouytsel et al., 2014)—were not expected to be influenced by the particular platforms through which pornography was accessed but rather the level of exposure to pornography in general.

Though some studies have collected data on the particular platforms used by young people to access pornography, that data is not always reported (see, e.g., Hardy et al., 2013). Where the data is reported, the platforms listed may overlap (see, e.g., Ma et al., 2017). As a result, it is, as Nash et al. (2015, p. 6) write, 'surprisingly complicated to determine whether pornographic content is viewed by children "online" or "offline."'

Such literature that does exist demonstrates, unsurprisingly, that 'the most common ways in which children and young people access pornography have changed in recent years, from magazines, videos, television and books … to the internet playing a more dominant role' (Horvath et al., 2013, p. 24). This said, at least up to 2013, the use of 'DVDs, films, magazines and television' as a source was apparently 'still widespread' (ibid.). In the UK context, data from 2010 also showed that traditional mass media may have had a significant role—at that time—in children's exposure to pornography (Nash et al., 2015).

The above-mentioned BBFC study is, as of June 2020, the most recent to provide, in the context of the United Kingdom, some data on the particular *online* platforms through which young people consume pornography. The survey found that for children aged 11–17 (as well as for 16- and 17-year-olds) 'image or video search engines' were the most commonly used source to intentionally seek out pornography, followed by social media sites and dedicated pornography websites. Among 16- to 17-year-olds, 62% had intentionally sought out pornography via an image or video search engine, 46% via social media sites, and 44% via dedicated pornography websites (BBFC, 2020, p. 26). Among the—albeit small and unrepresentative—group of three dozen 16- to 18-year-olds who were interviewed for the study, 'dedicated pornography sites such as Pornhub and xHamster were the most popular source of pornography', although 'it was also very common for respondents to have seen pornography through social media', with the most common platforms being Snapchat, Instagram and Twitter (BBFC, 2020, p. 23).

The aforementioned OFLC study also provides recent data on the particular platforms through which pornography is accessed by 14- to 17-year-olds in New Zealand. The survey found that, of those who had seen pornography in the last 6 months, mobile/smart phones were the main source for 56% and computers, tablets, TVs, or other digital devices for 37%. Magazines or books were the main source for only 2% of respondents (OFLC, 2018, p. 28). In terms of how *online* pornography was accessed, 'porn websites' were the most common source (for 66%), followed by 'Google or another online search service' (28%), 'other websites' (25%) and 'social media and other online services or apps' (16%) (OFLC, 2018, p. 28).

It is notable that social media sites and search engines appear to be less frequent sources of pornography in New Zealand than in the United Kingdom, although this may be to do with the differences in the surveys' samples and methodologies.

Workaround technology

As has been mentioned, the United Kingdom's original age verification legislation was criticised by some on the grounds that users would easily be able to bypass such controls, using technologies such as VPNs and Tor browsers (see, e.g., Matthews-King, 2018).

The only data we could find on the use of VPNs or Tor browsers by children was in the aforementioned BBFC study, which found that 23% of children aged 11–17 reported 'knowing how to use a potential "workaround" (i.e. a VPN… the use of Tor)' that could circumvent age verification, and this knowledge increased with age (to 33% of 16- to 17-year-olds) (BBFC, 2020, p. 56).

Hypotheses and research questions

Although this study will not engage in specific hypothesis testing, the literature suggests that 'at least a sizable minority' (Peter & Valkenburg, 2016) of UK adolescents will use pornography. Indeed, given that the United Kingdom is—compared with some other countries—relatively sexually liberal and that pornography is now easily available via the internet, the BBFC's (2020) finding that a large majority (79%) of 16- and 17-year-olds in the United Kingdom have seen pornography at some point seems plausible. In line with other research (see Peter & Valkenburg, 2016 and Alexandraki et al., 2018 for a summary), we would expect a higher level of consumption by males and also, perhaps, differences according to familial background. Recent data on the intensity with which pornography is consumed by young people in the United Kingdom is mostly anecdotal, but it does indicate regular consumption, especially by boys (BBFC, 2020, p. 20).

Little research exists on how—that is, through which media platforms—children and adolescents are exposed to pornography. However, printed books and magazines look likely to be a less frequent source than computers and, especially, smartphones (OFLC, 2018, p. 28). In the online environment, dedicated pornographic websites, social media sites, and search engines are likely to be sources of pornography (BBFC, 2020; OFLC, 2018), although the relative importance of these platforms as a source of online pornography is not clear from the literature. The extent to which children and adolescents are aware of—and use—technologies, such as VPNs and Tor browsers, that can be used to circumvent attempts to limit access to online pornography in particular jurisdictions is unclear, although one UK study indicated that a third of 16- to 17-year-olds may know how to use such technology (BBFC, 2020, p. 56).

Our first research question seeks to establish the prevalence and recency of pornography use among 16- and 17-year-olds in the United Kingdom:

RQ1: *What proportion of 16- and 17-year-olds in the United Kingdom have seen sexually explicit videos or pictures via any of eight named media platforms and how recent was any such exposure*?

Our second research question examines how—that is, through which media platforms—UK 16- and 17-year-olds are exposed to pornography:

RQ2: *Which media platforms do 16- and 17-year-olds in the United Kingdom use to view pornographic videos or pictures and how recent is the use of each platform for this purpose*?

For one particular platform, the subject of the original UK age verification legislation, we also ask:

RQ3: *How much time do 16- and 17-year-olds in the United Kingdom spend visiting dedicated pornographic websites per month and how is that time split between personal computers (PCs) and mobile devices (smartphones and tablets)*?

To better understand knowledge about, and use of, technology that could be used to circumvent any national limits on the access to online pornography, our final research question asks:

RQ4:   *What proportions of 16- and 17-year-olds in the United Kingdom are aware of, or have used, a VPN or Tor browser?*

Although the primary focus of our study was not on differences between individuals, for each of the above research questions we also analysed whether there were any differences according to respondents' age, gender, parental social grade, and their knowledge about/use of VPNs/Tor browsers. We did this for three reasons. First, in order that our results could contribute to what is known, in general terms (see, e.g., Peter & Valkenburg, 2016; Alexandraki et al., 2018), about the individual differences in pornography use among adolescents (specifically 16- and 17-year-olds). Second, because very little, if anything, is known about individual differences in contemporary pornography use among adolescents (specifically 16- and 17-year-olds) in the UK context. Third, because one of the individual differences (knowledge about/use of VPNs/Tor browsers) speaks directly to one of the primary aims of this study—the evaluation of the potential efficacy of emerging legislative approaches.

It was decided to restrict the survey to 16- and 17-year-olds, in part because it was not possible, for ethical reasons, to question children below the age of 16 on this topic without a parent or guardian being present. The presence of a parent or guardian would likely have influenced the answers they gave, for reasons of social desirability.

METHOD

Survey instrument and procedure

The survey consisted of five questions (see online Supporting Information Material). The survey was fielded in June 2019 using YouthSight's online research panel that had, at the time, approximately 140,000 UK-based panellists aged 16–30. YouthSight's panellists are recruited via a variety of channels including social media, partnerships with 'reliable, niche organisations' (YouthSight, 2018) and websites—including their own online community, OpinionPanel. Their recruitment process is compliant with the Market Research Society's (MRS) Code of Conduct and Binding Guidelines (ibid.). Panellists are paid up to £4 for each survey they take. As with most online research panels, YouthSight does not verify the identity of its panellists face-to-face. However, a variety of steps are taken to check the veracity of the demographic data YouthSight hold. For example, the self-reported ages of panellists are regularly checked by evaluating whether they are responding as expected for someone of their age. The self-reported locations of panellists are also regularly checked, including by comparing the region from which panellists are completing a survey against their self-reported location (Hayley Adonis, Head of Project Management, YouthSight, personal communication, 15 February 2021).

YouthSight is accredited by MRS.[1] The research was carried out in line with the guidance contained within MRS's *Guidelines for Research with Children and Young People* (MRS, 2014), including gathering informed consent, offering respondents the opportunity to stop the survey at any time, and giving a 'prefer not to say' option with each question. Indeed the MRS was specifically consulted about the ethical aspects of the survey instrument and approved its fielding.

The selection of panellists for the survey aimed to achieve a final sample that matched the spread of genders and parental social grades found among the population of 16- and

17-year-olds in the United Kingdom. Parental social grade is 'an occupation-based measure of socioeconomic status' (Ally et al., 2016) that is widely used in the United Kingdom. An initial set of survey invitations were sent to eligible panellists and survey completions monitored to see how the gender and social grade quotas were being filled. Subsequent survey invitations were more targeted in an attempt to meet the required quotas (Hayley Adonis, Head of Project Management, YouthSight, personal communication, 15 February 2021). Because the required quotas were not met exactly (see Table S1), the responses were weighted by gender[2] and parental social grade[3] so that the results would be more representative of the wider population of 16- and 17-year-olds in the United Kingdom. No weighting was applied regarding age, but, as is shown in the results section, no significant differences were found between 16- and 17-year-olds regarding whether, when, and how they had been exposed to sexually explicit videos and pictures. After data cleaning, the final sample contained 1,001 responses.

Because of the different types of measures used (e.g., ever seen pornography, number of days since last exposure to pornography and time spent using pornography) and their different measurement scales (binary and count), it was necessary to vary our analysis methods. For example, we used logistic regression for the binary variable and over-dispersed Poisson regression (Gardner et al., 1995) and linear regression for the count variables. All our statistical analyses are based on generalised linear models (McCullagh & Nelder, 1989). The data were analysed in R (R Core Team, 2018). In the results section, β is the coefficient of either the logistic, linear, or overdispersed Poisson regression.

RESULTS

RQ1: *What proportion of 16- and 17-year-olds in the United Kingdom have seen sexually explicit videos or pictures via any of eight named media platforms and how recent was any such exposure*?

Overall, 80.5% of 16- and 17-year-olds in the United Kingdom said they had seen, at least once, sexually explicit videos or pictures on at least one of the media platforms listed in the survey[4] (see Table 1 and Figure 1).

Among the large majority who had seen sexually explicit videos or pictures, their last exposure was, on average, 5.5 days previously. However, this mean figure was raised by a long tail of respondents whose last exposure was months ago. It was most common for those 16- and 17-year-olds in the United Kingdom who had seen sexually explicit videos or pictures to have seen them on the day they completed the survey: the median number of days since their last exposure was '0' (see Table 1 and Figure 1).

We compared[5] those who had and had not, been exposed to sexually explicit videos or pictures on any of the media platforms (see Table S2). The results showed statistically significant differences between the genders, with females less likely to have been exposed ($\beta = -1.02$, $p < 0.001$). There were also statistically significant differences according to whether respondents knew about, or had used, a VPN or Tor browser. For example, those who had used those technologies were more likely to have been exposed than those who did not know what they were ($\beta = 0.86$, $p < 0.001$). There were no statistically significant differences in exposure between 16- and 17-year-olds or between those of different social grades (see Table S2).

RQ2: *Which media platforms do 16- and 17-year-olds in the United Kingdom use to view pornographic videos or pictures and how recent is the use of each platform for this purpose*?

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As Table 1 and Figure 1 show, it is more likely for 16- and 17-year-olds in the United Kingdom to have been exposed, at least once, to sexually explicit porn videos or pictures via social media platforms (63%) or internet search engines (51%) than via dedicated pornographic websites (47%). Conversely, respondents were less likely to have seen pornography on television or DVDs, on messaging apps, or, particularly, on YouTube or e-mail and in magazines than on dedicated pornographic websites.

However, although a greater proportion of 16- and 17-year-olds in the United Kingdom had seen pornography on social media and internet search engines than on dedicated pornographic websites, that exposure was, relative to dedicated pornographic websites, less recent—most commonly 20 days ago. Among those who had visited dedicated pornographic websites, their last visit was, on average, 13 days previously. However, this mean figure has been elevated due to the number of respondents whose last visit was up to 356 days ago. It was most common for 16- and 17-year-olds in the United Kingdom to have visited a dedicated pornographic website the day before they took the survey: the median number of days since the last visit was 1 (see Table 1 and Figure 1). Television or DVDs, search engines, messaging apps, e-mail, and in particular YouTube and magazines, were relatively infrequently used as sources of pornography (see Table 1 and Figure 1).

Our analysis[5] (see Tables S2 and S3) showed statistically significant differences between the genders, with females less likely than males to have seen pornography on dedicated pornographic websites ($\beta = -1.997$, $p < 0.001$), social media ($\beta = -0.504$, $p < 0.001$), search engines ($\beta = -1.223$, $p < 0.001$), YouTube ($\beta = -0.492$, $p < 0.01$), messaging apps ($\beta = -0.523$, $p < 0.001$) and magazines ($\beta = -0.432$, $p < 0.05$), although not on TV or DVDs and e-mail.[6] There were also statistically significant differences according to whether respondents knew about, or had used, VPNs or Tor browsers. Household social grade made a significant difference to whether respondents had seen pornography on dedicated pornographic websites and YouTube. In the case of dedicated pornographic websites, respondents from households in social grade E were significantly more likely to have been exposed than respondents from the most populous social grade, C1 ($\beta = 0.74$, $p < 0.01$). In the case of YouTube, respondents from households of social grade B were significantly less likely to have been exposed than those from households in the most populous social grade, C1 ($\beta = -0.489$, $p < 0.05$).

No differences were found between 16- and 17-year olds.

We found[7] no consistently significant differences between males and females, 16- and 17-year-olds, and respondents from households of different social grades in the recency of their last exposure to pornography via all but one of the listed media platforms. In the case of dedicated pornographic websites, females visited them significantly less frequently than males (see Tables S4, S5, S7, and S8).

RQ3:   *How much time do 16- and 17-year-olds in the United Kingdom spend visiting dedicated pornographic websites per month and how is that time split between PCs and mobile devices (smartphones and tablets)?*

The 16- and 17-year-olds in the United Kingdom who visit dedicated pornographic websites say they do so for an average of 2 h 18 min per month. That average is raised by some who reported visiting for much longer. The most common—median—amount of time spent on such sites was 1 h/month.

Our analysis[8] (see Table S6) again showed statistically significant differences between the genders, with females spending significantly less time with dedicated

pornographic websites, 88.4 fewer minutes per month ($\beta = -88.4$, $p < 0.05$). Parental social grade again also made a significant difference. For example, respondents from households of social grade E spent significantly more time, 127.49 more minutes per month, than respondents from households of the most populous social grade, C1 ($\beta = 127.49$, $p < 0.05$).

Among those who accessed dedicated pornographic websites, the vast majority of time (87% of the time) was spent accessing them via mobile devices, defined as smartphones or tablet computers, rather than via PCs (13% of the time).

RQ4: *What proportions of 16- and 17-year-olds in the United Kingdom are aware of, or have used, a VPN or Tor browser?*

VPNs and Tor browsers enable users to mask their location and, it has been claimed, may provide a means for users to circumvent country-specific controls on online pornography. Among 16- and 17-year-olds in the United Kingdom, 45.7% had used a VPN or Tor browser, 22.9% knew what they were but had not used them, and 31.4% neither knew what they were or had used them.

DISCUSSION

This study's results add to the limited evidence that exists on the prevalence and predictors of pornography use by adolescents in the United Kingdom. It confirms the BBFC's (2020, p. 15) recent finding that around 80% of 16- and 17-year-olds have been exposed to pornography at some point. In line with much of the other research (for a summary, see Peter & Valkenburg, 2016), it also confirms that male adolescents are more likely to have been exposed. We also find that respondents who had used a VPN or Tor browser were more likely to have been exposed, echoing Ševčíková et al. (2014) finding that internet pornography use was higher among those with greater digital skills.

Our results may help to clear up some of the discrepancies that Horvath et al. (2013, p. 22) note regarding the frequency with which young people are exposed to pornography. Recent anecdotal evidence from the United Kingdom (BBFC, 2020, p. 20) had shown exposure could be 'daily' for 'most' 16- to 18-year-old males. This observation is in line with our own results that show that, among the 80.5% of 16- and 17-year-olds who had seen pornography, it was most common (the median value) for their last exposure to have been 0 days ago, with the mean number of days since the last exposure 5.5.

As Nash et al. (2015) have noted, it is 'surprisingly complicated' to determine from the literature the platforms through which children view pornography. Though such data has not been a relevant variable for much previous research, it is highly relevant to the decisions currently being made about the regulation of internet pornography as well as to any future studies that may be carried out on the efficacy of such regulations. Our results confirm (see, e.g., Horvath et al., 2013, p. 24) that the ways in which young people access pornography have changed, with the internet playing a more dominant role. We found magazines were a source for less than a quarter of 16-and 17-year-olds in the United Kingdom and were used very infrequently. Although TV and DVDs were a source for a higher proportion (38%), they came some way behind dedicated pornographic websites (47%), search engines (51%), and in particular social media sites (63%)—although they were on a par with internet messaging services (39%) and ahead of YouTube (24%). That a significant majority of 16- and 17-year-olds in the United Kingdom have come across pornography on social media sites suggests the UK government was right to include such platforms in its latest proposals to reduce children's exposure to legal online pornography.

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This data on exposure needs though to be contextualised with reference to how frequently such exposure takes place. Our study has shown that although a higher proportion of 16- and 17-year-olds had seen—at least once—pornography on social media sites than on dedicated porn websites, dedicated porn websites were used much more frequently as a source of pornography than social media sites. Among the 47% who had accessed dedicated porn websites, most commonly (the median value) their last exposure was just 1 day ago, with the mean number of days since last exposure 13 and the monthly visit time 2 h and 18 mins. The frequency with which dedicated pornographic websites are used shows how important such sites—the target of the United Kingdom's original age verification legislation—are as a source of pornography for adolescents. The Online Harms White Paper proposes to regulate companies that 'allow users to share or discover user-generated content or interact with each other online' (HM Government, 2019, p. 8). Though this encompasses popular 'porn-tube' sites, dedicated pornographic websites that only provide professionally made content will not be covered. This exclusion is, in the view of Sarah Connolly, Director, Security and Online Harms at the DCMS, not an issue for concern as she believes that 'in practice, there are very few commercial pornography sites that don't include some elements of user-generated content' (personal communication, 23 June 2020). Rachel Bishop, Deputy Director, Online Harms Policy at the DCMS agrees, adding that the few dedicated pornographic websites that do not include user-generated content present other barriers to children, notably paywalls that require a credit card (personal communication, 9 July 2020).

Although the United Kingdom's original age verification legislation has not been enacted, 'age verification technologies' are still a tool the UK government expects companies may use to 'prevent children from accessing age-inappropriate content' (Gov.uk, 2020). This study is the first to gather data on the proportion of 16- and 17-year-olds in the United Kingdom who have actually used—rather than being simply aware of how to use—workaround technologies, specifically VPNs and the Tor browser, that can be used to circumvent age verification controls. Our findings that 46% were already using these workaround technologies and another 23% were aware of them add weight to concerns that restrictions on the access to legal online pornography imposed by a single country may be circumvented by those the checks are designed to protect.

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CONFLICT OF INTERESTS
The authors declare that there are no conflict of interests.

ENDNOTES
[1]The Market Research Society (MRS) is the United Kingdom's professional body for market researchers. They are not related to YouthSight other than by accrediting them. To receive MRS accreditation, YouthSight have to ensure that all their staff 'understand their responsibilities under the MRS Code of Conduct and have the skills and processes in place to fulfill them'. A variety of steps have to be taken to ensure such understanding, including ensuring that the 'MRS Code of Conduct is written into employee contracts or referred to in the company handbook' (MRS, 2021).

[2]On the basis of data from the United Kingdom's Office for National Statistics.

[3]On the basis of National Readership Survey data on households' chief income earner.

[4]Dedicated pornographic websites, social media, internet search engines, TV or DVDs, messaging apps, YouTube, e-mail, and magazines.

[5]Using logistic regression.

[6]Because of the small proportion of respondents who had seen sexually explicit porn videos or pictures via e-mail, the results of our analysis of differences within the sample for this media platform should be interpreted with care.

[7]Using both linear regression and Poisson regression with log link and overdispersion.

[8]Using linear regression.

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REFERENCES

AFP. (1997, November 19). *Vietnam to provide full internet access from December 1*. Nexis online database (subscription only).

Alexa. (2019). The top 500 sites on the Web. https://www.alexa.com/topsites

Alexandraki, K., Stavropoulos, V., Anderson, E., Latifi, M. Q., & Gomez, R. (2018). Adolescent pornography use: A systematic literature review of research trends 2000–2017. *Current Psychiatry Reviews*, *14*(1), 47–58. https://doi.org/10.2174/2211556007666180606073617

Ally, A. K., Lovatt, M., Meier, P. S., Brennan, A., & Holmes, J. (2016). Developing a social practice-based typology of British drinking culture in 2009–2011: Implications for alcohol policy analysis. *Addiction*, *111*(9), 1568–1579. https://doi.org/10.1111/add.13397

Associated Press. (1995, December 31). *China plans to block sexual materials on Internet*. Nexis online database (subscription only).

BBC News. (2020, January 24). *'Porn Block' Companies Seek £3m in Damages*. BBC News. https://www.bbc.com/news/technology-51235675

Beyens, I., Vandenbosch, L., & Eggermont, S. (2015). Early adolescent boys' exposure to internet pornography: Relationships to pubertal timing, sensation seeking, and academic performance. *Journal of Early Adolescence*, *35*(8), 1045–1068. https://doi.org/10.1177/0272431614548069

Braun, E., & Kayali, L. (2020, July 9). *France to introduce controversial age verification system for adult websites*. Politico. https://www.politico.eu/article/france-to-introduce-controversial-age-verification-system-for-adult-pornography-websites/

British Board of Film Classification (BBFC). (2020, January). Young people, pornography & age-verification. https://www.revealingreality.co.uk/wp-content/uploads/2020/01/BBFC-Young-people-and-pornography-Final-report-2401.pdf

Carlin, J. (1996, June 13). *US Judges Overturn Ban on Internet Porn*. The Independent.

Children's Media Foundation. (2020, April 10). APPG report on online harms. https://www.thechildrensmediafoundation.org/archives/8468/8468

Chorley, M. (2014, March 28). *Age checks needed to access porn, watchdog warns after finding one in 20 visitors to adult sites are under 18*. MailOnline.

Department for Digital, Culture, Media and Sport (DCMS). (2017). Particulars of proposed designation of age-verification regulator. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/669567/particulars_of_proposed_designation_of_age-verification_regulator_-_december_2017.pdf

Doornwaard, S. M., Bickham, D. S., Rich, M., ter Bogt, T. F. M., & van den Eijnden, R. J. J. M. (2015). Adolescents' use of sexually explicit internet material and their sexual attitudes and behavior: Parallel development and directional effects. *Developmental Psychology*, *51*(10), 1476–1488. https://doi.org/10.1037/dev0000040

Elmer-Dewitt, P. (1995, July 3). *Online erotica: On a screen near you*. Time magazine.

Finn, C. (2019, June 19). *Taoiseach says government will review UK's new 'Porn Block' law to see if it could work in Ireland*. TheJournal.ie. https://www.thejournal.ie/ireland-porn-block-law-age-verification-4688853-Jun2019/

Freedom House. (2017). Iceland. https://freedomhouse.org/sites/default/files/FOTN%202017_Iceland.pdf

Freedom House. (2019a). United Arab Emirates. https://freedomhouse.org/country/united-arab-emirates/freedom-net/2019

Freedom House. (2019b). Uzbekistan. https://freedomhouse.org/country/uzbekistan/freedom-net/2019

Freedom House. (2019c). Pakistan. https://freedomhouse.org/country/pakistan/freedom-net/2019

Gardner, W., Mulvey, E. P., & Shaw, E. C. (1995). Regression analyses of counts and rates: Poisson, overdispersed Poisson, and negative binomial models. *Psychological Bulletin*, *118*(3), 392–404.

Gayle, D. (2018, October 18). *Millions of porn videos will not be blocked by UK online age checks*. The Guardian. https://www.theguardian.com/technology/2018/oct/18/millions-of-porn-videos-will-not-blocked-uk-online-age-checks

Geiger, G. (2020, October 26). *German authorities want to implement DNS blocks against major porn sites*. Motherboard. https://www.vice.com/en/article/bvx8v4/german-authorities-want-to-implement-dns-blocks-against-major-porn-sites

Gov.uk. (2020). Online Harms White Paper—Initial consultation response. https://www.gov.uk/government/consultations/online-harms-white-paper/public-feedback/online-harms-white-paper-initial-consultation-response

Hardy, S. A., Steelman, M. A., Coyne, S. M., & Ridge, R. D. (2013). Adolescent religiousness as a protective factor against pornography use. *Journal of Applied Developmental Psychology*, *34*(3), 131–139. https://doi.org/10.1016/j.appdev.2012.12.002

Harper, C., & Hodgins, D. C. (2016). Examining correlates of problematic Internet pornography use among university students. *Journal of Behavioral Addictions*, *5*(2), 179–191.

HM Government. (2019, April). Online Harms White Paper. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/793360/Online_Harms_White_Paper.pdf

Horvath, M. A. H., Alys, L., Massey, K., Pina, A., Scally, M., & Adler, J. R. (2013). *Basically… porn is everywhere: A rapid evidence assessment on the effects that access and exposure to pornography has on children and young people (Project Report)*. Office of the Children's Commissioner for England. http://eprints.mdx.ac.uk/10692/

Kelion, L. (2017, July 17). *Porn ID checks set to start in April 2018*. BBC News. https://www.bbc.co.uk/news/technology-40630582

Kleinman, Z. (2018, March 12). *Online porn age checks delayed in UK*. BBC News. https://www.bbc.co.uk/news/technology-43370999

Kohut, T., Balzarini, R. N., Fisher, W. A., Grubbs, J. B., Campbell, L., & Prause, N. (2020). Surveying pornography use: A shaky science resting on poor measurement foundations. *Journal of Sex Research*, *57*(6), 722–742.

Ma, C. M. S., Shek, D. T. L., & Lai, C. C. W. (2017). Individual differences in intentional and unintentional exposure to online pornography among Hong Kong Chinese adolescents. *International Journal on Disability and Human Development*, *16*(4), 417–423.

Market Research Society (MRS). (2014). MRS guidelines for research with children and young people. https://www.mrs.org.uk/pdf/2014-09-01Children%20and%20Young%20People%20Research%20Guidelines.pdf

Market Research Society (MRS). (2021). How to join. https://www.mrs.org.uk/company-partner/how-to-join

Matthews-King, A. (2018, November 13). *Porn site age verification to be in force by spring next year after delays, minister says*. The Independent. https://www.independent.co.uk/news/uk/home-news/porn-site-age-verification-uk-pornhub-sex-online-adult-video-government-id-a8631886.html

McCullagh, P., & Nelder, J. A. (1989). *Generalized linear models*. Chapman and Hall.

Morgan, N. (2019). Online harms: Written Statement—HLWS12. https://www.parliament.uk/business/publications/written-questions-answers-statements/written-statement/Lords/2019-10-16/HLWS12/

Nair, A. (2019). *The regulation of Internet pornography: Issues and challenges*. Routledge.

Nash, V., Adler, J. R., Horvath, M. A. H., Livingstone, S., Marston, C., Owen, G., & Wright, J. (2015). *Identifying the routes by which children view pornography online: Implications for future policy-makers seeking to limit viewing*. Department for Culture, Media and Sport. http://eprints.lse.ac.uk/65450/

OFLC. (2018). NZ youth and porn: Research findings of a survey on how and why young New Zealanders view online pornography. https://www.classificationoffice.govt.nz/assets/PDFs/NZYouthPorn-OFLC-December2018-PrintVersion.pdf

Parliament of Canada. (2020). S-203. https://www.parl.ca/LegisInfo/BillDetails.aspx?Language=E%26billId=10873545

Peter, J., & Valkenburg, P. M. (2016). Adolescents and pornography: A review of 20 years of research. *Journal of Sex Research*, *53*(4–5), 509–531.

R Core Team. (2018). *R: A language and environment for statistical computing*. R Foundation for Statistical Computing, Vienna, Austria. https://www.R-project.org/

Radio New Zealand. (2018, August 10). Systems needed to protect children from online porn, MP says. https://www.rnz.co.nz/news/political/363796/systems-needed-to-protect-children-from-online-porn-mp-says

Ševčíková, A., Šerek, J., Barbovschi, & Daneback, K. (2014). The roles of individual characteristics and liberalism in intentional and unintentional exposure to online sexual material among European youth: A multilevel approach. *Sexuality Research and Social Policy*, *11*(2), 104–115. https://doi.org/10.1007/s13178-013-0141-6

Svedin, C. G., Åkerman, I., & Priebe, G. (2011). Frequent users of pornography. A population-based epidemiological study of Swedish male adolescents. *Journal of Adolescence*, *34*(4), 779–788. https://doi.org/10.1016/j.adolescence.2010.04.010

Taylor, J. (2020, March 5). *Australia could implement mandatory age verification for pornography websites*. The Guardian. https://www.theguardian.com/culture/2020/mar/05/australia-could-implement-mandatory-age-verification-for-online-pornography-sites

van Ouytsel, J., Ponnet, K., & Walrave, M. (2014). The associations between adolescents' consumption of pornography and music videos and their sexting behavior. *Cyberpsychology, Behavior and Social Networking*, *17*(12), 772–778. https://doi.org/10.1089/cyber.2014.0365

Wake, D. (2009, June 23). *Children at risk from online porn, says film censor*. Press Association Mediapoint. Nexis online database (subscription only).

Waterson, J., & Hern, A. (2019, June 20). *UK age-verification system for porn delayed by six months*. The Guardian. https://www.theguardian.com/technology/2019/jun/20/uks-porn-age-verification-system-to-be-delayed-indefinitely

Wheeler, B. (2018, January 5). *Porn age-checks risk pushing children to dark web, officials warn*. BBC News. https://www.bbc.co.uk/news/uk-politics-42577460

Wright, P. J., Herbenick, D., & Paul, B. (2020). Adolescent condom use, parent-adolescent sexual health communication, and pornography: Findings from a US probability sample. *Health Communication*, *35*(13), 1–7. https://doi.org/10.1080/10410236.2019.1652392

Yagielowicz, S. (2019, December 23). *Poland becomes newest nation to explore online age verification*. Xbiz. https://www.xbiz.com/news/249192/poland-becomes-newest-nation-to-explore-online-age-verification

YouthSight. (2018). *Panel book*. https://www.youthsight.com/download-panel-book-2018-youthsight

SUPPORTING INFORMATION

Additional Supporting Information may be found online in the supporting information tab for this article.

EXHIBIT 6

Document title:	Font Size Guidelines for Responsive Websites (2021 Update)
Capture URL:	https://www.learnui.design/blog/mobile-desktop-website-font-size-guidelines.html
Page loaded at (UTC):	Mon, 24 Jul 2023 19:09:59 GMT
Capture timestamp (UTC):	Mon, 24 Jul 2023 19:15:16 GMT
Capture tool:	10.26.9
Collection server IP:	34.230.137.168
Browser engine:	Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/108.0.5359.215 Safari/537.36
Operating system:	Windows_NT (Node 16.17.1)
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The Responsive Website Font Size Guidelines

Erik D. Kennedy · Updated Aug 7, 2021

> You're reading Font Sizes in UI Design: The Complete Guide. Quickly navigate to other chapters: Intro · iOS · Android · Web · Principles

In this post, we'll cover **what font size** to use for a responsive website. First we'll cover mobile guidelines, then desktop guidelines. Ready?

Mobile Web Typography Guidelines

Picking font sizes for a mobile site is not an exact science. Instead, I will give a few guidelines (with *rationales*) to help you in your own design process.

1. Body fonts should be about 16px

16px Proxima Nova

Frequently the messages have meaning; that is they refer to or are correlated according to some system with certain physical or conceptual entities. These semantic aspects of communication are irrelevant to the engineering problem.

16px Caslon Pro

Frequently the messages have meaning; that is they refer to or are correlated according to some system with certain physical or conceptual entities. These semantic aspects of communication are irrelevant to the engineering problem.

16px Futura

Frequently the messages have meaning; that is they refer to or are correlated according to some system with certain physical or conceptual entities. These semantic aspects of communication are irrelevant to the engineering problem.

Understanding that different fonts can be **more or less legible** even at the *exact same size*, 16px is a good place to start when choosing your default mobile font size. By "default" or "primary", I mean the size that most paragraphs, labels, menus and lists are set to. (Let's assume you've already picked a great font, which is pretty much one of the two cheat codes for good design)

Ultimately, you want the body text on your phone (when held at a natural distance) to be **as readable as the text in a well-printed book** (when held at a natural – usually slightly farther – distance).

One process for getting there:

1. Start with 16px
2. Consider going smaller if you have (A) have an interaction-heavy page or (B) a font with particularly large, easy-to-read characters (like Proxima Nova in the image above)
3. On the other hand, you can be much more liberal with exploring sizes *larger* than 16px, but in particular if (A) you have a text-heavy page or (B) a font that is particularly *difficult* to read at a given size (like Futura

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2. Consider going smaller if you have (A) have an [interaction-heavy page](#) or (B) a font with particularly large, easy-to-read characters (like [Proxima Nova](#) in the image above)

3. On the other hand, you can be much more liberal with exploring sizes *larger* than 16px, but in particular if (A) you have a [text-heavy page](#) or (B) a font that is particularly *difficult* to read at a given size (like [Futura](#) above)

While there's some subjectivity to the best primary font size to use on the page, the next rule is more hard and fast.

2. Text input sizes should be *at least* 16px

This is important. If you're designing a website or app that can be viewed on mobile devices, there is only strict rule: Use a **text input font size of at least 16px**.

If your text inputs have a smaller font size than that, iOS browsers will *zoom in on the left side of the text input*, often obscuring the right side and forcing the user to manually zoom out after using the text box.

Video or it didn't happen, right?:

Animation courtesy the dashing [Ste Grainer](#). You can read his article on the auto-zoom phenomenon [here](#).

This is a strong reason to make the body font size 16px or larger as well. It can look awkward to have larger form control text than paragraph text 👆

3. Secondary text should be about 2 sizes smaller than your paragaph text

For **secondary text** – like lesser labels, captions, etc. – use a size a couple notches smaller – such as **13px or 14px**. I do NOT recommend going down just *one* font size, since then it's too easy to confuse with normal text. In addition, when text is less important, you want to style it so that you're *clearly communicating* the lesser importance – often using, say, a lighter

than your paragaph text

For **secondary text** – like lesser labels, captions, etc. – use a size a couple notches smaller – such as **13px or 14px**. I do NOT recommend going down just *one* font size, since then it's too easy to confuse with normal text. In addition, when text is less important, you want to style it so that you're *clearly communicating* the lesser importance – often using, say, a lighter shade of gray (something about 70% as strong is a good place to start).

4. Always view your designs on an actual device

The gold standard of choosing mobile font sizes is to **view your designs on an actual device**. I can't recommend this practice highly enough, since the *feel* of an mobile app design on your laptop screen is *way* different than when you're holding it in your hand. As a beginning designer, I was shocked almost every time I opened on mobile a page I designed on desktop. Font sizes, spacing... everything was off. So use Figma Mirror or Sketch Mirror or whatever app makes sense for you, but *view your designs on-device*.

5. Be familiar with Material Design and iOS standards

It never hurts to know what the biggest design systems in town are doing. For instance:

- Material Design's default font size is 16px Roboto and secondary font size is 14px (more on Material Design styling)
- iOS's default font size is 17px SF Pro and secondary font size is 15px (more on iOS styling)

Do you need to copy them? Nope – but it never hurts to have a baseline to compare to.

Desktop Web Typography Guidelines

When picking a base size for a desktop website or web app, you can break down most designs into one of two types:

1. **Text-heavy pages**. Articles, blogs, news, etc. These are pages where the *primary purpose* the user has on the page is to read. There is very little in terms of *interaction* – perhaps just clicking a few links.
2. **Interaction-heavy pages**. Apps that involve more hovering, clicking, searching for an item in a list or table, editing, typing, etc. There may be plenty of text on the page, but it's not stuff you read straight through like a book.

Need an example or two? *This page* is a text-heavy page. *Your Facebook feed* is an interaction-heavy page. Each has slightly different concerns, so I'll handle them separately. Keep in mind that both will probably be useful. The "About" page of a crazy web app is still *text-heavy*. The "Contact" page on a vanilla blog is still *interaction-heavy*.

Text-Heavy Pages

Long story short, for text-heavy pages, you want *larger font sizes*. If folks are reading for long periods of time, *be nice*: don't make them strain their eyes.

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vanilla blog is still *interaction-heavy*.

Text-Heavy Pages

Long story short, for text-heavy pages, you want *larger font sizes*. If folks are reading for long periods of time, *be nice*: don't make them strain their eyes. Now, each font is different, even at the same size, but we're talking:

- **16px** – absolute minimum for text-heavy pages
- **18px** – a better font size to start with. You're not printing out a single-spaced Word document; you're writing for people sitting a couple feet from their decade-old monitors.
- **20px+** – may feel awkwardly large at first, but is *always* worth trying out in your design app. The best-looking text-heavy site on the web, Medium.com, has a default article text size of 21px.
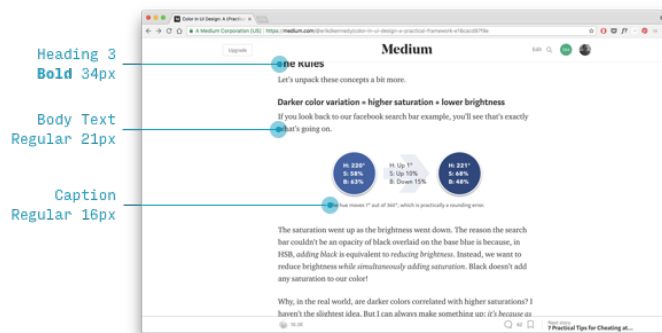
Similar to what I mentioned in the mobile web section, there's a great rule of thumb here: your website's text (viewed at typical monitor distance) should be as readable as a well-made book (viewed at typical book-holding distance). This is actually a really annoying and dorky exercise to perform, because you have to shut one eye and squint at a book you're holding up like a moron. But find a nice, solitary place, and sanity-check: *is my font size readable even at a couple feet? Even adjusting for my young and powerful eyes?* OK, you get the idea.

Interaction-Heavy Pages

Now, for *interaction-heavy pages*, smaller text sizes are perfectly acceptable. In fact, depending on the amount of data your user is taking in at once, even 18px text is uncomfortably large. Look at your (web) inbox, look at twitter, look at any apps you use that require **scanning** over **reading**, look at apps that show you *data* – you're going to be hard-pressed to find sustained paragraphs of 18px text. Instead, 14px-16px is the norm. But there won't be *just one* font size. There will likely be *smaller* sizes for *less important* things, and *larger* sizes for *more important* things (titles and subtitles and sub-subtitles, etc.), and it'll all be blended together in a giant hodgepodge.
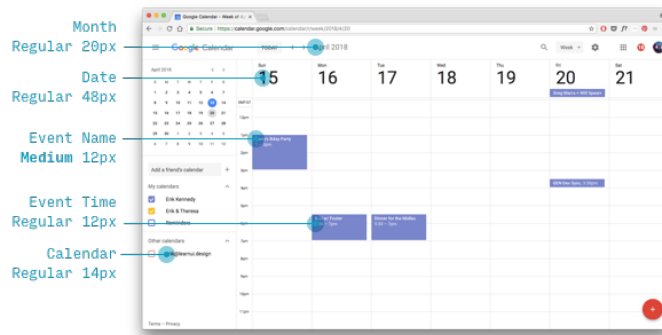
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and *larger* sizes for *more important* things (titles and subtitles and sub-subtitles, etc.), and it'll all be blended together in a giant hodgepodge.

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Now here's the important part: for any interaction-heavy page, the font sizes are driven LESS by some top-down decrees ("type scales", I'm looking at you 😠) than the specific needs of each piece of text and the interplay between them.

For example:

- The **event names** are in 12px medium, which is a font style entirely absent from the Material Design guidelines. Yet given they need to fit 7 columns on a screen that's only 1440px wide, and many events are quite short, this is an ideal font size choice. Any smaller and legibility suffers. Any bigger and the event names will be cut off too frequently. Design is tradeoffs, kid. If you can't name the tradeoff you're making, you're probably making it in the wrong place.
- The **hours of the day labels** ("12pm", "1pm", etc) are font-size: 10px. That's another style missing entirely from the Material Design guidelines. Yet horizontal space is at a premium. Each event is labelled with its start time anyways. Why *not* make the left-hand labels smaller?
- The **dates** are 48px. Again, not found in Material Design guidelines. Now, in this case, I don't know why they didn't use 45px, which *is* the official "Display 2" size, but I'll say this: if it had been me designing, I probably would have made the 48px size bold, and here, bold would be an issue. It would attract *too* much attention. So I would've modified the style anyways.

When you're designing your interaction-heavy desktop website, keep this in mind. You need to modify text styles on a case-by-case basis. Consistency is wonderful, but no one gets mad when a font size is one px too small – they get mad when *they can't easily find what they're looking for*.

As Few Font Sizes as Possible

One of the single biggest typographical mistakes from beginning UI designers is to use *way* too many font sizes. Even the most interaction-heavy pages can typically look just fine with **about 4 font sizes total**.

Let's break it down:

1. **Header font size**. This is the biggest font size on your page. Use it for the headline or section titles. If you have both a headline *and* section

designers is to use *way* too many font sizes. Even the most interaction-heavy pages can typically look just fine with **about 4 font sizes total**.

Let's break it down:

1. **Header font size**. This is the biggest font size on your page. Use it for the headline or section titles. If you have both a headline *and* section titles, you should almost certainly be using two different font sizes here.
2. **Default font size**. This is the most common font size on your page, and should be used for all body text – as well as most controls, like text boxes, dropdowns, buttons, and menus. The key header mistake beginning designers make here is to use *many* font sizes for elements that should all be *one* font size.
3. **Secondary font size**. This is a font size – usually about 2pt smaller than your default font size – that you use for *less-important details* of the site. Supporting information and stats, sometimes captions, etc.
4. **Tertiary/caption/label/wildcard font size**. Very often you will need one more font size. Sometimes it's because your information is so hierarchical you need a *tertiary* style even more subdued than the secondary style. Other times, you might use uppercase for labels or buttons – and because of the increased visual weight of the uppercase, you want to use a slightly smaller size for the text itself (remember: balance up-pop vs. down-pop). So this fourth font size is a bit of a wildcard. Not every design needs it, but many do. My only warning: as much as possible, default to *consistency*.

Make sense? Let's move on.

Continue to **Chapter 4: Principles & Resources**

One Final Note 😎

If this is your first time here, you might also be interested in:

- Learn UI Design, my full-length online video course on user interface design
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FOUNDER, THESIMPLEWEB

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— JEAN-PHILIPPE

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— JEAN-PHILIPPE
UX STRATEGIST, FREELANCE

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EXHIBIT 7

Document title:	Kelsy Burke, author of 'The Pornography Wars,' on porn politics - Los Angeles Times
Capture URL:	https://www.latimes.com/entertainment-arts/books/story/2023-04-25/the-author-of-the-pornography-wars-thinks-we-should-watch-less-and-listen-more
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Collection server IP:	34.230.137.168
Browser engine:	Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/108.0.5359.215 Safari/537.36
Operating system:	Windows_NT (Node 16.17.1)
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Document title: Kelsy Burke, author of 'The Pornography Wars,' on porn politics - Los Angeles Times
Capture URL: https://www.latimes.com/entertainment-arts/books/story/2023-04-25/the-author-of-the-pornography-wars-thinks-we-should-watch-less-and-listen-more
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Page 1 of 8

Los Angeles Times

Kelsy Burke spent five years researching porn — spelling political battles over it — for "Pornography Wars." (Dana Danewood)

BY STUART MILLER
APRIL 25, 2023 6 AM PT

Kelsy Burke spent five years deeply immersed in pornography. No, not by herself in a darkened room, but out in the world, researching the subject and interviewing people about it. Her interviewees were antiporn activists, sex workers and others whom she terms "porn positive" people and consumers.

ON THE SHELF

The Pornography Wars: The Past, Present, and Future of America's Obscene Obsession

By Kelsy Burke
Bloomsbury: 352 pages, $30

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In her book "The Pornography Wars: The Past, Present, and Future of America's Obscene Obsession," the sociologist explores everything from shifts in the industry to varying approaches to porn addiction to debates over laws and regulations. Burke strives to avoid being prescriptive but doesn't look kindly on either extreme — on the one hand, the capitalist free-for-all that left Pornhub and other sites open to videos involving trafficked women or minors for many years, on the other, a moralist crusade to ban all pornography.

She is clearly more sympathetic to sex workers and what she calls "porn positive" advocates, but in a recent video interview, Burke said that early readings have "pissed people off on both sides." She adds that she is writing not for activists but for ordinary people "who don't feel like they have stakes in either side of the porn wars."

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Burke emphasized that she is presenting her findings, not her opinions: "I'm careful in the book about not telling people what I believe about porn or what they should believe."

This interview has been edited for length and clarity.

Did you come into this project with preconceived notions you had to shed?

All of us have ideas about sex and sexuality and pornography based on our personal experiences and our social locations. I have a background as a born-again Christian but I'm now a progressive sociologist, queer person and feminist, and all of those things played into expectations I had.

Interviewing people blew my preconceived notions apart. I had assumed that the people who used moral and religious arguments were uniformly the people opposed to pornography, but my assumptions were rooted in stereotypes.
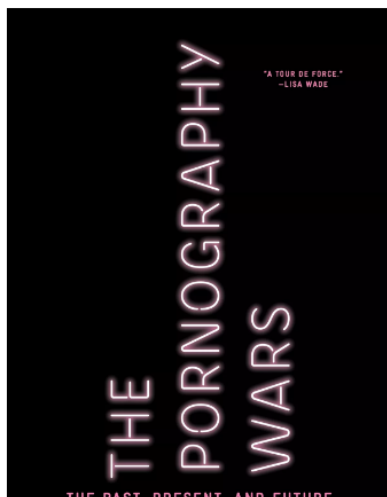
I found a lot of porn-positive people who are also very interested in ethics and morality, who are religious or spiritual and who feel sexual exploration and sexual freedom is part of their religious or spiritual identity or practice.

How different would a book on pornography have been before the internet?

I started thinking I was just writing about internet pornography, but

the internet?

(Bloomsbury)

I started thinking I was just writing about internet pornography, but then I asked how we got here, and I had to go back to the 1840s to start the story. In some ways, the internet changed everything, but when it comes to the messages around pornography, they are the same arguments recycled over and over. It's questions of how we as a democratic society deal with sex, how we treat the relationship between religion and expressions of sexuality.

Is there room for compromise or listening, or is this like other culture war battles over, for example, the right to an abortion?

The antiporn movement folks see everything as black and white, so there's little gray area. They think the idea that women would freely choose to perform in porn is an impossibility; no sex work can be consensual, it's by its nature exploitative. So it's hard to start a dialogue because there's no openness.

It would be helpful for policymakers and politicians to be open to multiple perspectives, but messaging about pornography often stems from groups with overt religious or political ties and gives the illusion that they know the truth about porn.

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CALIFORNIA

'Scarlet letter statute': L.A.'s adult performers strike back against state registry bill

Feb. 29, 2020

You say you don't want to be prescriptive, but it feels like you are challenging blind, willfully naive porn consumption.

Yes, one of my goals is for people to think more deeply about their porn habits and beliefs about porn. Both sides would say it's not a good idea to look at free porn — one side because they don't want you to look at any porn and the other because those streaming sites are not good for people who work in the industry, just for the people who own the sites. You used to be able to sign a contract with a major production company, make a few videos a month and do a few appearances and make a nice living. That's not true today.

If someone uses indie porn or OnlyFans or pays for commercial porn, can they do it guilt-free?

There's not one single true answer to that question. If men are paying for and watching feminist porn but still believe it's addictive or they shouldn't be doing it while in a relationship, then it's still going to cause problems. But we also know from empirical studies that watching diverse pornography can be a source of affirmation for queer young people.

Conservatives who oppose queer lifestyles would disapprove of that. But do you think some porn goes too far? It seems like boundaries have been pushed and pushed some more in recent years.

It is clear that internet pornography is more violent than the porn in the '70s or '80s. In the extreme hardcore end of the industry, people said the industry sets a good standard with strict consent practices and safe words and other strategies to minimize harm. But they are not fail-proof, and people are still mistreated and abused. That's a real problem and something the industry needs to reckon with. But it's hard to make improvements, because we don't know how to talk about extreme and kinky porn in a way that is disentangled from the religious conservative arguments.

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There are 16 states that have passed resolutions declaring pornography to be a public health crisis, and almost all say something about how watching porn leads you down a slippery slope to more extreme and deviant sexual desires. Antiporn groups tend to exaggerate and sensationalize stories of harm and make them examples of the industry writ large, which is not what I found in my research.
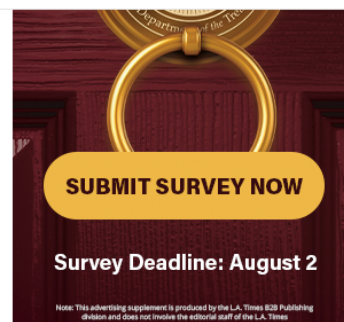
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public health crisis, and almost all say something about how watching porn leads you down a slippery slope to more extreme and deviant sexual desires. Antiporn groups tend to exaggerate and sensationalize stories of harm and make them examples of the industry writ large, which is not what I found in my research.

How can legislators actually make things better?

If I had to make one policy recommendation, it would be to listen to sex workers in making policy decisions. SESTA/FOSTA is one example. These laws [which in part clamped down on online escort listings] passed in 2018 with widespread bipartisan support because the law is intended to curb internet sex trafficking. All along, sex workers were saying it's not going to reduce sex trafficking and it'll make their work more dangerous and harder. But no one listened.

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